

**Washington Occupational Injury and Illness Surveillance and Prevention Program**  
**Principal Investigator: David Bonauto, MD, MPH**

**Washington State Department of Labor and Industries**  
**Safety and Health Assessment and Research for Prevention (SHARP) Program**

Washington Fundamental Occupational Safety and Health Surveillance Program  
Program Director: David Bonauto, MD, MPH, bone235@Lni.wa.gov, (360) 902-5664

Annual Report of Accomplishments and Outcomes, July 1, 2010-June 30, 2011

The goal of Washington State's fundamental occupational safety and health surveillance program is to enhance capacity to provide information for action to improve the occupational safety and health of Washington's 3.3 million workers working at any of the 160,000 employers within the state.

1. The Occupational Health Indicator data describes the occupational health status of the Washington State working population. Washington collaborates with other NIOSH funded states to publish the indicator data on the CSTE website. Publication of the collaborative datasets often lags the availability of the data for individual indicator completion.

Outcome: Washington State has accelerated the publication of the CSTE Occupational Health Indicator Data on the Washington State Department of Labor Website. We publish quarterly to semiannual web-based updates of the most current indicator data available for Washington State. The data updates are available at <http://www.lni.wa.gov/Safety/Research/Pubs/#Surveillance>.

2. The NIOSH-funded Washington State occupational health surveillance program has core expertise in using varied state-level data resources (e.g. workers compensation data, hospital discharge data) to respond to emerging hazards and data requests from employers, workers, and groups representing employer and employees.

Intermediate Outcome: With this capacity, we are able to respond to general requests for data from employers and workers in Washington State – over the project period, we provided data regarding hearing loss, injuries in orchards, and injuries and illnesses in nursing homes, and asbestos related pulmonary disorders.

We've completed a state technical report with a descriptive analysis of work-related asthma surveillance program data from 2000-2008. We identified plant materials (Western Red Cedar/wood dusts, hops, and grain/hay/paper dusts) as common causes of work-related asthma in Washington State. Current US states conducting surveillance for work-related asthma have not reported such high levels of plant material asthma and therefore we feel these exposures are unique to Washington State and argue for additional state-based work-related asthma surveillance programs. A peer reviewed publication of a descriptive analysis of Washington's work-related asthma has been accepted by the Journal of Asthma.

3. Workplace wellness programs aimed at improving the general health of the workforce through weight loss, smoking cessation, and promoting a healthy lifestyle have demonstrated healthcare savings and increased worker productivity in US workplaces. Very little data are available to describe health and health behaviors of the workforce at the state level by the workers' industry and occupation of employment. Moreover, what people do for work likely contributes to the social gradient of health in the United States – with workers with higher occupational status experiencing a

healthier life even after adjusting for differences in education and income. Washington State has collected Industry and Occupation data from 1997 through 2010 on the Washington State Behavioral Risk Factor Surveillance System (BRFSS).

Potential Outcome: We have coded industry and occupation for nearly 80,000 Washington State BRFSS respondents for the years 2003 – 2010. Preliminary analyses for obesity rates for employed respondents suggests that after controlling for age, gender, race/ethnicity, adequate nutritional intake of fruits and vegetables, physical activity levels at work and during leisure time, that:

- Truck drivers are 1.7 times more likely to be obese than managers and executives; and
- Physicians and other health diagnosing occupations are half as likely to be obese as managers and executives.

Our results documenting the variations in obesity across occupations may both prioritize the allocation of federal grant funds in the new healthcare law to occupations most in need of workplace wellness programs and demonstrate the utility of including industry and occupation questions on the national and state level BRFSS. Publication is expected at the end of 2011.

4. Hospitalized work-related burns and work-related amputations reflect sentinel injuries to identify high risk workplaces for occupational injury. Recent publications of our surveillance data for these conditions have generated interest from other researchers regarding the adequacy of data capture for their prevention of workplace injuries.

#### **Publications:**

Anderson NJ, Bonauto DK, Adams D. Psychiatric diagnoses after hospitalization with work-related burn injuries in Washington state. J Burn Care Res. 2011 May-Jun;32(3):369-78.

Anderson NJ, Reeb-Whitaker C, Bonauto DK. Work-related Asthma in Washington State: A summary of SHARP's asthma surveillance data 2001-2008. Technical Report 64-13-2010. Washington State Department of Labor and Industries, Olympia, WA. Summary available at <http://www.lni.wa.gov/Safety/Research/Files/AsthmaTechSumm.pdf>

Anderson NJ, Reeb-Whitaker C, Bonauto DK. Work-related Asthma in Washington State, 2001-2008. Journal of Asthma (Accepted for publication).

**Washington Occupational Injury and Illness Surveillance and Prevention Program**  
**Washington State Department of Labor and Industries**  
**Safety and Health Assessment and Research for Prevention (SHARP) Program**

**Washington Fatality Assessment and Control Evaluation (FACE) Program**

Program Director: Todd Schoonover, PhD, [scto235@lni.wa.gov](mailto:scto235@lni.wa.gov), (360) 902-5663

**Annual Report of Accomplishments and Outcomes, July 1, 2010-June 30, 2011**

The goal of the Washington State FACE program is to prevent workplace fatalities through surveillance, fatality investigations, prevention activities with information dissemination and evaluation.

**1. Outcome: Improved use of WA FACE Materials** - From July 1, 2010 through June 30, 2011, there were 495,104 downloads of FACE materials from the Washington FACE website. This is a **79.8% increase** in the number of downloaded documents from the previous 2009-2010 performance period. The dramatic increase in downloads is the result of efforts to create relevant and useful products and disseminate them into the hands of those who can benefit the most. Here are the reasons for the above outcome:

**A: Outputs:** Annually our FACE program develops new useful prevention materials for employers, health and safety professionals, and workers. From July 2010 – June 2011, WA FACE created (see <http://www.lni.wa.gov/Safety/Research/FACE/default.asp>) :

- 10 Fatality Narrative (Construction (n=7), Agriculture (n=3))
- 2 FACE Fatality Investigation Reports
- 1 FACE Fatal Facts
- 1 Annual Data Summary Report
- 1 Hazard Alert

**B: Improving WA FACE Product Integration with other state safety and health resources.**

WA FACE integrated several publications into the Washington State Department of Labor & Industries updated topic web pages. This integration and placement enables a larger audience of users to access FACE products by specific hazard topic areas. The following table lists the topic specific page and number of FACE documents integrated into each page.

<b>Hazard Topic Web Page</b>	<b>Number of Integrated WA FACE Documents</b>
Ladders	10 (6 in English, 4 in Spanish)
Tractors	10 (8 in English, 2 in Spanish)
Cranes	4 (3 construction crane, 1 gantry crane)
Driving	4
Flagger Safety	3
Heat Stress	2
Confined Spaces	2
Control of Hazardous Energy	2
Electrocution Hazard/Power Lines	1
Window Cleaning	1

## **C. Improving Safety through Targeted Product Dissemination and Industry Collaborations**

Each new Construction and Agriculture Industry Fatality Narrative and Fatality Investigation Report contains specific prevention recommendations and was directly distributed by email to subscribers. FACE maintains growing email distribution lists for each of these products. To ensure FACE products will have the greatest potential impact, WA FACE also disseminated products to employers at risk of specific hazards. The following WA FACE products were mailed directly to employers in 2010-2011:

- 250 copies of the hazard alert, “Crushing Hazards to Workers Under Vehicles” were sent to employers in the vehicle and heavy equipment maintenance industry.
- 250 copies of the investigation report, “Commercial Carpet Cleaner Killed by CO” were sent to employers in the WA State commercial carpet cleaner risk class.
- 250 copies of three construction fatality narratives involving residential roofers were sent to employers in the WA State residential roofing risk class.
- 300 copies of FACE Fatal Facts “Hazards to Drivers and Other Workers Loading and Unloading” were sent to employers in the WA State transportation and warehousing risk class.

WA FACE products were distributed at several conferences and meetings where the potential for impact was high due to the large audiences of health and safety professionals and labor representatives. These included:

- The Governor’s Annual Construction Safety Day.
- 2 Construction Advisory Council (CAC) meetings. These are Washington State Department of Labor & Industries facilitated labor and management meetings attended by over 100 employers and health and safety professionals.
- Washington Safety and Health Training Institute (WASHTI).

FACE also collaborated with industry trade associations to distribute and publish investigation findings and recommendations that were effective methods to influence hazard awareness, safety training and practices, and safe product design.

- FACE partnered with the National Glass Association and the Washington Trucking Association to disseminate an investigation report and a hazard alert to their members.
- FACE successfully published findings and recommendations from an investigation report in the trade journal of the National Glass Association, *Glass*.
- FACE successfully published findings and recommendations from an investigation report in a trade journal for commercial cleaners, *CleanFax*.

## **2. WA FACE Evaluation and Feedback Tracking System**

The WA FACE web-based electronic survey provides valuable feedback from FACE products users. Product users vary but are predominantly health and safety professional who are using FACE products to train and share with others, to be more aware of specific job hazards, and to decide how to do and what to use to make the job safe.

### **Who uses FACE products?**

<b>Work position</b>	<b>%</b>
Health & safety professional	56%
Management	10%
Hourly employee	7%
Salaried employee	7%
Site Supervisor	7%
Other	13%

### **How are readers using FACE products?**

<b>Use</b>	<b>%<sup>a</sup></b>
Trainings or tool box talks	66%
Personal awareness	60%
Distribute to employees/others	54%
Use of safety gear	22%
Post on bulletin board	19%
Reporting hazards	18%

a. Non-mutually exclusive-respondents can choose several

### **What changes have been made after reading FACE products?**

<b>Changes made</b>	<b>%<sup>a</sup></b>
Identifying hazards	68%
Use of safety gear	27%
Planning a job	25%
Setting up a job or work site	21%
Choice or use of tools/equipment	20%
Procedures for completing a job	20%
Reporting hazards	16%

a. Non-mutually exclusive-respondents can choose several

**Washington Occupational Injury and Illness Surveillance and Prevention Program**  
**Washington State Department of Labor and Industries**  
**Safety and Health Assessment and Research for Prevention (SHARP) Program**

**Using Workers' Compensation Data to Identify High Risk Workplaces for Work-related Musculoskeletal Disorders (WMSDs)**

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Project Coordinator: Daniel Hunter, MA, [hund235@lni.wa.gov](mailto:hund235@lni.wa.gov), (360) 902-6836

**Annual Report of Accomplishments and Outcomes, July 1, 2010-June 30, 2011**

The overall goal of this project is to develop and test a surveillance system to identify prevention efforts for high hazard workplaces by industry sector and size for work-related musculoskeletal disorders (WMSDs) like carpal tunnel syndrome or tendonitis of the shoulder, hand/wrist, back, or knee. To this end, SHARP staff have:

- Characterized the magnitude and distribution of WMSD workers compensation (WC) claims frequency, incidence, and cost by industry and NAICS size;
- Conducted injured worker telephone interviews within ninety days of identifying compensable WMSD claims with four or more lost workdays;
- Conducted management and union/safety committee interviews among high and low incidence rate companies by industry group within each of seven NORA sectors regarding injury experience, WMSD risk factors, training, employment patterns, safety culture, and turnover to identify potential explanations for differences in WC claims rates; and,
- Conducted paired employer site visits to high and low WMSD incident rate companies to identify potential differences in exposures, management culture, and safety issue awareness via site walkthroughs, worker observations, and job-based WMSD risk factor assessment.

**Major Accomplishments and Outputs**

**Company Site Visits for WMSD Risk Factor Assessment**

- Having identified Washington businesses from seven NORA sectors with both upper and lower quartile incidence rates for WMSDs in one or more body regions (including back, shoulder, hand/wrist, and knee), SHARP staff have completed site visits to companies to conduct worker observations and job hazard assessments.
- To date, participants have included manufacturers in the plastics, metals, and wood industries, electrical contractors, landscaping services, and community and nursing care facilities for the elderly.
- During these visits SHARP staff members have had the opportunity to consult with company representatives regarding various safety issues of specific interest to employers, and have discussed suggestions for reducing exposures to WMSD risks.
- For example, when working with a large electrical contractor, our ergonomists responded to an identified hazard and recommended adopting specific ergonomic equipment that would reduce exposure to risks for shoulder and wrist injury while also improving productivity and work efficiency.
- Additionally, our field teams have helped participating companies recognize and highlight individual workers' innovative solutions to potential hazards, encouraging safety representatives to disseminate these ideas as best practices throughout their broader worker population.

**Risk Factor Assessment Checklist "App"**

- Risk factor data from company site visits are collected using a novel electronic checklist application developed for this purpose by SHARP staff and deployed using a small hand-held touch screen tablet.
- The checklist app affords the unique ability to observe, enter, calculate and analyze data seamlessly in the field, and allows ergonomists to identify and report potentially hazardous risk factors in real time.
- Software incorporates major evaluative components of several validated assessment methods including the Washington State Department of Labor and Industries' Caution Zone Checklist, the Washington State Hazard Zone Checklist, the Strain Index method, as well as the Quick Exposure Check (QEC) method.
- With the rise in handheld digital computing, we anticipate that this electronic WMSD hazard surveillance tool will find traction throughout industry with a broad user base among regional and national occupational health professionals.

## **Potential Outcomes/Impacts**

### **Job Evaluation Reports**

- Each company participating in site visits for WMSD risk factor assessment receives a customized job evaluation report for each job observed.
- These reports provide details regarding potentially hazardous risk factors and targeted recommendations for injury prevention as well as overall exposure assessments including instances where jobs may currently meet or exceed industry best practices.
- Reports are generated directly from data gathered using the handheld digital checklist, and serve to supplement companies' existing safety programs with objective findings from professional occupational health experts.

**Washington Occupational Injury and Illness Surveillance and Prevention Program**  
**Washington State Department of Labor and Industries**  
**Safety and Health Assessment and Research for Prevention (SHARP) Program**

**NORA Surveillance Projects (TIRES):**

**Trucking Injury Reduction Emphasis through Surveillance (TIRES) Program**

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**TIRES: Annual Report of Accomplishments and Outcomes, July 1, 2010-June 30, 2011**

The Washington State trucking industry has some of the highest costs and rates for work-related injuries, however very little is being done to address injuries other than those caused by motor vehicle collisions. Previous research by Washington State Department of Labor and Industries, SHARP Program revealed that the most common and costly injuries in trucking are musculoskeletal disorders, falls, motor vehicle collisions and injuries from being struck by or against an object. SHARP determined from the case follow-up surveillance data of the first TIRES grant that these injuries occurred during four particular work activities: loading and unloading activities including manual handling, securing the load, entering and exiting the cab, and walking around the job site. Determining the root cause of injuries developed during these job activities and producing useful safety materials to prevent them is the continuing mission of TIRES.

**Increasing knowledge**

TIRES developed educational materials to meet the needs of industrial safety personnel in the field. For the period from July 1, 2010 to June 30, 2011, these include:

- **Online simulation training tool** - Interactive, educational resource to be used by drivers and training personnel, uses the coefficient of friction to show the likelihood of a slip/fall incident based on various environmental and footwear scenarios.
- **TIRES E-news electronic newsletter** - Introduces and educates managers and safety personnel on the magnitude of specific injury types. 8 produced.
- **True story narratives** – Actual stories of Washington workers injured on the job. Includes injury prevention tips. 4 produced.
- **Tip sheets** – Injury prevention tips for specific scenarios. 3 produced.
- **Posters** – Eye catching and educational posters for employee awareness. 8 produced.
- **Company corner** – Washington company shares insights into how to have a positive safety culture. 1 produced.
- **Spanish translations** – Translations of previously produced TIRES documents. 6 produced.
- **Trade journal article** – Williams, J. *Risk – Part of the Job?* The Route produced by Washington Refuse & Recycling Association. September 2010.

**Impact: Our educational materials promote occupational safety and health within the industry. During the period from July 1, 2010 – June 30, 2011 there have been nearly 200,000 downloads of our TIRES educational materials. The online simulation tools were downloaded more than 6,500 times. Several industry safety professionals from all over the country have requested copies for use in their trainings.**

**Building a network of Trucking Companies and Drivers for Occupational Safety and Health**

- We have produced an interactive web site where industry stakeholders can download free educational materials or share their own success stories. [www.KeepTruckingSafe.org](http://www.KeepTruckingSafe.org).



**Impact:** 72% of the KeepTruckingSafe.org internet users have included our website on their favorites list. 361 trucking industry stakeholders are now receiving our TIRES E-newsletter that contains links to our safety publications. Washington's major trucking industry groups, the Washington Trucking Associations and the Washington Refuse and Recycling Association have linked to our website.

**Conclusion:** TIRES has listened to stakeholders to develop useful, relevant materials for safety training, filling an educational gap in this important industry by focusing on the work activities that produce the most common and costly injuries in the industry: Loading and unloading activities including manual handling, securing the load, entering and exiting the cab, and walking around the job site. In addition to the [www.KeepTruckingSafe](http://www.KeepTruckingSafe.org) web site, we use the venue of the Washington Labor & Industries web site for safety materials. We have created brand recognition for TIRES and developed a presence in the industry by attending events such as the World's Largest Truck Convoy to benefit the Special Olympics and the Washington Truck Driving Associations' Truck Driving Championships.

We are completing our Safety Program template for use by small trucking companies. This will be launched in our TIRES E-news.

**Plans:** TIRES is responding to stakeholder feedback by continuing to produce safety materials and online training simulations. Truck drivers tend to be visual learners and we have had many safety directors contact us with ideas for more simulations. TIRES will extend our impact using social marketing tools such as a TIRES safety blog and YouTube training videos. Additionally, we will continue to use traditional outreach methods by publishing results and safety information in trade journals. Over the next year, TIRES will continue to reach the trucking industry, both locally by participating in Washington trucking events, and nationally using online tools such as simulations, the TIRES E-news and social media.

**NORA Surveillance Project (Temps):****Injury Reduction Among Temporary Workers in Washington State through Surveillance**

Program Director: Michael Foley, MA, folm235@Lni.wa.gov, (360) 902-5429

**Temps: Annual Report of Accomplishments and Outcomes, July 1, 2010-June 30, 2011****Major Accomplishments and Outputs:** The first two aims of the projects are the following:

- Characterize the magnitude of workers' compensation claims incidence among workers employed by temporary agencies grouped by industry sector, as represented by risk class, and compare to that of workers employed under standard employment arrangements working in comparable industries and occupations.

**Outcomes:**

- We have reviewed and re-validated the selection of Washington Industrial Classification risk classes that are to be considered comparable to each Temporary Help Services risk class.
  - For the most recent five-year period we have compared accepted claims rates, time-loss claims rates, claim rejection rates, average lost workdays per claim, claim costs and frequency of employer protest between each of twelve temporary risk classes and their selected comparable permanent risk classes. The results show a significant discrepancy between temporary workers and their standard-employed counterparts, with temporary workers having higher injury rates and more lost workday rates.
- Conduct 80 follow-up interviews per year with temporary workers and a matched set of standard workers to gain information about tasks, hazards, safety training, and ability to identify and report hazards.

**Outcomes:**

- To date we have conducted 30 follow-up interviews with temporary workers and their matched standard-employment counterparts.

**Washington Occupational Injury and Illness Surveillance and Prevention Program**  
**Washington State Department of Health (DOH)**  
**Pesticide Illness Monitoring and Prevention Program**

Maintaining and Improving Pesticide Illness Surveillance in Washington State  
Project Director—Joanne Prado, joanne.prado@doh.wa.gov, (360) 236-3172

**Annual Report of Accomplishments and Outcomes, July 2010 - June 2011**

The goal of this project is to prevent pesticide illness in Washington State by:

- Gaining knowledge about pesticide illness by investigating illness reports and contributing information to national aggregate data managed by NIOSH;
- Improving identification and documentation of occupational pesticide poisoning, including antimicrobial related illness cases; and
- Applying findings from pesticide illness surveillance to prevention, education, worker training, and contributing to scientific publications and meetings.

**Major Accomplishments**

From July 1, 2010 to June 30, 2011, Washington State DOH Pesticide Program staff reviewed more than 1000 reports of illness and investigated 229 incidents. During this same period, we finalized the data from our 2009 case investigations and submitted investigation results to NIOSH. We used what we learned from investigating pesticide illness to guide prevention activities. These activities included policy and licensing changes, public education, and worker training both on an individual basis and in collaboration with community and agency groups. Specific outcomes and accomplishments follow:

Potential Outcomes

- Identified a product of concern containing sodium hypochlorite (5%) and trisodium phosphate (2%) that is manufactured in Oregon and widely used in the Pacific Northwest for mold abatement. These ingredients are associated with numerous and severe illnesses. Our investigators documented illness cases and found that the product label did not provide basic safety information and therefore failed to protect the health of the user. Because the product label does not make claims to kill pests, it bypasses EPA registration. Other similar products are marketed and used for mold abatement, and are subject to EPA regulatory process. WA DOH Pesticide Program brought this product to the attention of state and federal pesticide regulators, with a presentation titled, “Squeaking by Regulatory Protection with 30 Second Outdoor Cleaner” at the 2011 SENSOR Pesticides winter workshop.
- Contributed to an article on pesticide illness associated with off-target drift (Lee SJ, Mehler L, Beckman J, Diebolt-Brown B, Prado J, Lackovic M, Waltz J, Mulay P, Schwartz A, Mitchell Y, Moraga-McHaley S, Gergely R, Calvert G. 2011. Acute Pesticide Illnesses Associated with Off-Target Pesticide Drift from Agricultural Applications—11 States, 1998-2006. *Environmental Health Perspectives*).

Intermediate Outcomes

- Provided education and training to help high risk occupational groups prevent pesticide illness. A sample of activities include the following:
- Participated in Spanish and English language agricultural worker pesticide handler licensing recertification courses organized by Washington State Department of Agriculture (WSDA) and Washington State University.
- Presented health and safety information to pesticide applicators who work with County Irrigation Districts.

- Presented in Spanish and English, results from pesticide illness surveillance and research identifying the key contributing factors that contribute to illness in agricultural pesticide handlers and supervisors, at WSDA sponsored recertification courses.
- Co-sponsored a booth at a community safety and health fair in a rural agricultural community. Answered questions from community members in Spanish and English.
- Presented contributing factors information obtained from analyzing data from non-agricultural pesticide illness investigations and reviewed selected pesticide case investigations to English speaking Pest Control Operators in Oregon, during the Oregon State Pesticide Operator licensing training.

### End Outcome

- The detection and removal of this dangerous, illegal product, sold through a website claiming the toxicity of the product was the “lowest among all ant control solution in the market” was a direct result of DOH Pesticide Program staffs’ thorough case investigation and EPA follow-up. While investigating an illness which sent a woman to the emergency room, we learned that the pesticide she purchased from a website had no EPA registration number, no active ingredient information, and that the product label was not written in English. We notified EPA enforcement division staff, who obtained a sample and had it tested at the Washington State Department of Agriculture lab. The product tested positive for the persistent organochlorine insecticide Mirex, and came from Malaysia. Mirex was banned in the United States in 1976. We advised the woman on proper cleanup of the highly toxic product, which she had used to get rid of ants in her home. We collaborated to assist Region 10 EPA staff, who closed-down website sales and notified potential buyers by mailing more than 3,000 letters and issuing a news release.
- Reduced pesticide use problems and resulting illness at a particular work site. Workers and residents at a large, urban public housing facility were identified as being uniquely at risk for pesticide-exposures, as a result of case investigations. In one event, an administrative worker with asthma sought medical attention after a maintenance worker activated an insecticide fogger in an office and closed the door. Fumes permeated the office and resulted in illness to the employee. We shared de-identified results of pesticide illness investigations with state and local agencies, and presented pesticide health effects information and safety recommendations to a gathering of maintenance workers employed by an urban housing authority. This had been an ongoing practice and has since stopped. No additional case reports of pesticide illness have been received from this housing facility.

### **Other Notable Accomplishments**

- DOH Pesticide website was updated and reformatted in the fall of 2010. Average homepage hits per month more than tripled during the 9 months following the changes.
- In 2010, the WA DOH Pesticide Program adopted the CDC-NIOSH State Pesticide Illness Database known as “SPIDER” into our illness surveillance program.
- DOH Pesticide and Labor & Industries staffs are working to enhance the weekly reporting mechanism for occupational illness and injury claims. A comparison of past years’ data sets provided justification for maintaining the existing method and finding a way to incorporate the alternative, easier to maintain reporting mechanism.
- Criteria for ascertainment of antimicrobial cases were determined based on the results of records research to identify the most frequently occurring occupations and industries where pesticide illness has been reported in Washington State. We identified the following industries and occupational groups for focusing the antimicrobial case follow-up:
  - Accommodation & food Services Industries; Food Preparation & Serving Occupations
  - Healthcare & Social Assistance Industries; Bldg & Grounds Cleaning Maintenance Occup.
  - Agriculture Industries; Farming, Fishing, and Forest Occupations.